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<p align="center">Department of Forensic Science</p> <p align="center">CONTROLLED SUBSTANCES TRAINING MANUAL</p>	<p>Amendment Designator:</p>
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<div> <p align="center">23 FORENSIC LAB SPECIALISTS</p> <p>23.1 Introduction</p> <p>23.1.1 Forensic Lab Specialists (FLS) provide important support to Forensic Scientists in the laboratory. Typically FLS perform duties including, but not limited to the following:</p> <ul style="list-style-type: none"> • Prepare solutions, reagents and standards, • Participate in the quality assurance/quality control program, • Maintain inventory of expendable supplies, reagents and materials, • Perform routine maintenance of instrumentation and equipment, • Perform general housekeeping duties (e.g., cleaning glassware, removing sharps waste) • Transfer sealed evidence and • Under close supervision, perform routine procedures in the analysis of casework. <p>23.2 Training Outline</p> <p>23.2.1 Instruction will be provided to the FLS by directed study, demonstration by the trainer and observation of the trainee. All tasks are performed under the direction of the trainer until the training segment is completed.</p> <p>23.2.2 Reference information for the topics below can be found in other sections of this manual, the Controlled Substances Procedures Manual (CSPM) and other Department manuals. The specific locations are noted by section numbers in parentheses by the topic.</p> <p>23.2.3 Orientation</p> <p>23.2.3.1 Introduction to the local facility, staff and how the FLS fits into the Department of Forensic Science (DFS).</p> <p>23.2.3.2 Description of the FLS position and clarification of duties.</p> <p>23.2.3.3 Coverage of the following:</p> <ul style="list-style-type: none"> • Quality Manual • Controlled Substances Procedures Manual with emphasis on the Quality Assurance Section • Controlled Substances Training Manual • Regional Operating Procedures • Safety Manual, to include Bloodborne Pathogen and Chemical Hygiene training • Organizational Chart of DFS <p>23.2.3.4 Introduction of the technical capabilities of all the DFS laboratories and how it fits into the Virginia law enforcement system.</p> <p>23.2.3.5 Introduction to the LIMS system.</p> <p>23.2.4 Laboratory and Glassware</p> <p>23.2.4.1 Objectives</p> <ul style="list-style-type: none"> • To familiarize the FLS with the basic cleaning procedures for laboratory areas, hoods and glassware • To train the FLS on the proper operation of the laboratory glassware washer • To familiarize the FLS with the safety requirements of the laboratory and available personal protective equipment (PPE) </div>	

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<div> <ul style="list-style-type: none"> • To instruct the FLS on the proper handling and maintenance of compressed gas cylinders • To familiarize the FLS with the proper disposal of Biohazard and Sharps waste </div> <div> <p>23.2.4.2 Modes of Instruction</p> <ul style="list-style-type: none"> • Demonstrations by the trainer </div> <div> <p>23.2.4.3 Reference</p> <div> <p>23.2.4.3.1 DFS Safety Manual</p> <p>23.2.4.3.2 Operations manual for glassware washer</p> </div> </div> <div> <p>23.2.4.4 Modes of Evaluation</p> <div> <p>23.2.4.4.1 Observation of the FLS by the trainer</p> </div> </div> <div> <p>23.2.5 Reagent Preparation</p> <div> <p>23.2.5.1 Objectives</p> <ul style="list-style-type: none"> • To familiarize the FLS with the preparation of color test reagents and thin layer chromatography (TLC) baths and sprays • To familiarize the FLS with the preparation of standards and solutions • To familiarize the FLS with the Quality Assurance schedule and documentation </div> <div> <p>23.2.5.2 Modes of Instruction</p> <ul style="list-style-type: none"> • Demonstrations by the trainer </div> <div> <p>23.2.5.3 Reference</p> <div> <p>23.2.5.3.1 <i>CSPM</i> Color Test Section</p> <p>23.2.5.3.2 <i>CSPM</i> Thin Layer Chromatography Section</p> <p>23.2.5.3.3 <i>CSPM</i> Quality Assurance Section</p> </div> </div> <div> <p>23.2.5.4 Modes of Evaluation</p> <div> <p>23.2.5.4.1 Observation of the FLS by the trainer</p> </div> </div> <div> <p>23.2.6 Balances</p> <div> <p>23.2.6.1 Objectives</p> <ul style="list-style-type: none"> • To familiarize the FLS with the operation of laboratory balances • To familiarize the FLS with balance calibration checks and quality assurance </div> <div> <p>23.2.6.2 Modes of Instruction</p> <ul style="list-style-type: none"> • Presentations and demonstrations by the trainer regarding balances to include general use, leveling and cleaning • Presentation and demonstration regarding the quality assurance of balances </div> </div> </div>	

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<ul style="list-style-type: none">• Study Questions (see Section 6.5)	
23.2.6.3 Reference	
23.2.6.3.1 Balance Manufacturer’s operating manual	
23.2.6.3.2 CSPM Quality Assurance Section	
23.2.6.4 Modes of Evaluation	
23.2.6.4.1 Observation of the FLS by the trainer, including quality assurance of balances	
23.2.6.4.2 Completion of the study questions	
23.2.6.4.3 Competency test sample Receive a previously weighed sample from the trainer	
23.2.7 Ordering/Stocking	
23.2.7.1 Objectives	
<ul style="list-style-type: none">• To familiarize the FLS with routine ordering practices for consumable laboratory supplies	
23.2.7.2 Modes of Instruction	
<ul style="list-style-type: none">• Demonstrations by the trainer	
23.2.7.3 Reference	
23.2.7.3.1 DFS Administrative Policies	
23.2.7.4 Modes of Evaluation	
23.2.7.4.1 Observation of the FLS by the trainer	
23.2.8 Evidence Transfer	
23.2.8.1 Objectives	
<ul style="list-style-type: none">• To familiarize the FLS with the fundamentals of evidence security and transfer procedures in order for the FLS to handle sealed evidence• To familiarize the FLS with the LIMS system	
23.2.8.2 Modes of Instruction	
<ul style="list-style-type: none">• Demonstration by the trainer regarding proper chain of custody and evidence handling procedures. The FLS should observe the trainer transferring evidence for a minimum of two weeks.• Demonstration by the trainer regarding the proper use of the LIMS system.• Study Questions (see Section 5.5.1 – 5.5.5)	
23.2.8.3 Reference	
23.2.8.3.1 Quality Manual, Department of Forensic Science, Evidence Handling section	

23.2.6.4 Modes of Evaluation

23.2.6.4.1 Observation of the FLS by the trainer, including quality assurance of balances

23.2.6.4.2 Completion of the study questions

23.2.6.4.3 Competency test sample
Receive a previously weighed sample from the trainer

23.2.7 Ordering/Stocking

23.2.7.1 Objectives

- To familiarize the FLS with routine ordering practices for consumable laboratory supplies

23.2.7.2 Modes of Instruction

- Demonstrations by the trainer

23.2.7.3 Reference

23.2.7.3.1 DFS Administrative Policies

23.2.7.4 Modes of Evaluation

23.2.7.4.1 Observation of the FLS by the trainer

23.2.8 Evidence Transfer

23.2.8.1 Objectives

- To familiarize the FLS with the fundamentals of evidence security and transfer procedures in order for the FLS to handle sealed evidence
- To familiarize the FLS with the LIMS system

23.2.8.2 Modes of Instruction

- Demonstration by the trainer regarding proper chain of custody and evidence handling procedures. The FLS should observe the trainer transferring evidence for a minimum of two weeks.
- Demonstration by the trainer regarding the proper use of the LIMS system.
- Study Questions (see Section 5.5.1 – 5.5.5)

23.2.8.3 Reference

23.2.8.3.1 *Quality Manual*, Department of Forensic Science, Evidence Handling section

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<div> <div>23.2.8.3.2</div> <div>LIMS system manual</div> </div> <div> <div>23.2.8.4</div> <div>Modes of Evaluation</div> <div> <div>23.2.8.4.1</div> <div>Observation of FLS by trainer</div> <div> <p>The trainer should observe the FLS transferring evidence while maintaining appropriate documentation for a minimum of two weeks.</p> </div> </div> <div> <div>23.2.8.4.2</div> <div>Written Examination</div> <div> <p>The content of the questions will be based on both the study questions and references.</p> </div> </div> </div> <div> <div>23.2.9</div> <div>Color Tests</div> <div> <div>23.2.9.1</div> <div>Objectives</div> <div> <ul style="list-style-type: none"> To familiarize the FLS with color tests to enable them to perform quality assurance and assist examiners with casework under supervision. </div> </div> <div> <div>23.2.9.2</div> <div>Modes of Instruction</div> <div> <ul style="list-style-type: none"> Demonstration by the trainer regarding proper color test procedures </div> </div> <div> <div>23.2.9.3</div> <div>Reference</div> <div> <div>23.2.9.3.1</div> <div>CSPM, Color Tests section</div> <div> <div>23.2.9.3.2</div> <div>CSPM, Marijuana section</div> </div> </div> </div> <div> <div>23.2.9.4</div> <div>Modes of Evaluation</div> <div> <div>23.2.9.4.1</div> <div>Observation of FLS by trainer</div> </div> </div> </div> <div> <div>23.2.10</div> <div>Thin Layer Chromatography (TLC)</div> <div> <div>23.2.10.1</div> <div>Objectives</div> <div> <ul style="list-style-type: none"> To familiarize the FLS with the practice of TLC to enable them to perform quality assurance and assist examiners with casework under supervision. </div> </div> <div> <div>23.2.10.2</div> <div>Modes of Instruction</div> <div> <ul style="list-style-type: none"> Demonstration by the trainer regarding proper TLC procedures </div> </div> <div> <div>23.2.10.3</div> <div>Reference</div> <div> <div>23.2.10.3.1</div> <div>CSPM, Thin Layer Chromatography section</div> </div> </div> <div> <div>23.2.10.4</div> <div>Modes of Evaluation</div> <div> <div>23.2.10.4.1</div> <div>Observation of FLS by trainer</div> </div> </div> </div>	

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<p>23.2.11 Gas Chromatography (GC)</p> <p>23.2.11.1 Objectives</p> <ul style="list-style-type: none"> • To familiarize the FLS with the practice of GC to enable them to perform quality assurance and assist examiners with casework under supervision. <p>23.2.11.2 Modes of Instruction</p> <ul style="list-style-type: none"> • Demonstration by the trainer regarding proper GC procedures <p>23.2.11.3 Reference</p> <p>23.2.11.3.1 <i>CSPM</i>, Gas Chromatography section</p> <p>23.2.11.4 Modes of Evaluation</p> <p>23.2.11.4.1 Observation of FLS by trainer</p> <p>23.2.12 Extractions</p> <p>23.2.12.1 Objectives</p> <ul style="list-style-type: none"> • To familiarize the FLS with extraction methodologies used in standard preparation • To familiarize the FLS with extraction methodologies used in sample preparation <p>23.2.12.2 Modes of Instruction</p> <ul style="list-style-type: none"> • Demonstrations by the trainer regarding proper extraction procedures <p>23.2.12.3 Reference</p> <p>23.2.12.3.1 <i>CSPM</i>, Psilocybin and Psilocyn section</p> <p>23.2.12.3.2 <i>CSPM</i>, Cathinone</p> <p>23.2.12.4 Modes of Evaluation</p> <p>23.2.12.4.1 Observation of FLS by trainer</p> <p>23.2.12.4.2 Competency test sample(s)</p> <p align="center">Receive a previously validated sample from the trainer for each type of extraction</p> <p>23.2.13 Gas Chromatography/Mass Spectrometry (GC/MS)</p> <p>23.2.13.1 Objectives</p> <ul style="list-style-type: none"> • To familiarize the FLS with the practice of GC/MS to enable them to perform quality assurance and assist examiners with casework under supervision. • To familiarize the FLS with the ChemStation software. <p>23.2.13.2 Modes of Instruction</p> <ul style="list-style-type: none"> • Demonstration by the trainer regarding proper GC/MS procedures 	

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<div> <ul style="list-style-type: none"> • Demonstration of liner cleaning and preparation by the trainer </div> <div> <p>23.2.13.3 Reference</p> </div> <div> <p>23.2.13.3.1 <i>CSPM</i>, GC/MS Section 23.2.13.3.2 <i>CSPM</i>, GC Section 10.3.13.1 (liner cleaning)</p> </div> <div> <p>23.2.13.4 Modes of Evaluation</p> </div> <div> <p>23.2.13.4.1 Observation of FLS by trainer</p> </div> <div> <p>23.2.14 Fourier Transform Infrared Spectroscopy (FTIR)</p> </div> <div> <p>23.2.14.1 Objectives</p> </div> <div> <ul style="list-style-type: none"> • To familiarize the FLS with the practice of FTIR and associated accessories to enable them to perform quality assurance and assist examiners with casework under supervision. • To familiarize the FLS with the OMNIC software. </div> <div> <p>23.2.14.2 Modes of Instruction</p> </div> <div> <ul style="list-style-type: none"> • Demonstration by the trainer regarding proper FTIR sampling procedures • Nicolet OMNIC Tutorial • Study questions • Practical exercises </div> <div> <p>23.2.14.3 Reference</p> </div> <div> <p>23.2.14.3.1 <i>CSPM</i>, Infrared Spectroscopy section</p> </div> <div> <p>23.2.14.4 Study Questions</p> </div> <div> <p>23.2.14.4.1 What is Infrared Spectrophotometry?</p> <p>23.2.14.4.2 Draw a block diagram of the FTIR and briefly describe the functions of the major components.</p> <p>23.2.14.4.3 What is meant by the “fingerprint region” of an IR spectrum?</p> <p>23.2.14.4.4 List advantages and disadvantages of ATR versus traditional bench FTIR.</p> <p>23.2.14.4.5 What spectral libraries are available?</p> <p>23.2.14.4.6 Describe how spectra run for an examiner are labeled.</p> </div> <div> <p>23.2.14.5 Practical Exercises</p> </div> <div> <p>23.2.14.5.1 Obtain the following samples from the trainer and run on the ATR accessory and using a KBr pellet. Print results according to trainer instructions including a library search.</p> <ul style="list-style-type: none"> • Cocaine base • Cocaine HCl • Procaine HCl • Amoxicillin </div>	

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<p>23.2.14.5.2 Obtain the following samples from the trainer and run on the ATR accessory. Perform any clean-up procedures indicated by the trainer. Provide printed data to the trainer for evaluation of data and documentation practices.</p> <ul style="list-style-type: none"> • Gamma butyrolactone • 3,4-MDMA HCl • Ephedrine • Pseudoephedrine • Methamphetamine • Phentermine • Sugar • Sodium bicarbonate • Cocaine base / procaine mixture • Cocaine HCl / lactose mixture <p>23.2.14.6 Modes of Evaluation</p> <p>23.2.14.6.1 Observation of FLS by trainer</p> <p>23.2.14.6.2 Completion of study questions</p> <p>23.2.14.6.3 Competency test sample</p> <p>Receive a previously validated sample from the trainer</p> <p>23.2.15 Tablets and Capsules</p> <p>23.2.15.1 Objectives</p> <ul style="list-style-type: none"> • To familiarize the FLS with available references for pharmaceutical identifiers <p>23.2.15.2 Modes of Instruction</p> <ul style="list-style-type: none"> • Demonstrations by the trainer <p>23.2.15.3 Reference</p> <p>23.2.15.3.1 <i>CSPM</i>, Pharmaceutical Identifiers section</p> <p>23.2.15.4 Modes of Evaluation</p> <p>23.2.15.4.1 Observation of FLS by trainer</p> <p>23.3 Completion of Training</p> <p>23.3.1 The training will be considered complete when the FLS has completed all of the sections in the training manual, which are required by the TC, and been evaluated by the TC or his designee.</p> <p>23.3.2 The checklist for the FLS training will be signed and completed for each area assigned by the TC and any other personnel who assisted in the training in accordance with the Department Quality Manual.</p> <p>23.3.3 When the training is complete the TC will notify all supervisors, the Section Chief, the QAC and training records will then be stored in accordance with the Department Quality Manual.</p>	

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<p>23.3.4 If the FLS cannot meet the expected criteria during an expected period of time for training, steps will be taken to effect appropriate action.</p> <p style="text-align: right;">◆End</p>	